WORKSHOP SUMMARY

Vital Signs Scoping Workshop
For
Eugene O'Neill National Historic Site and
John Muir National Historic Site

This document is a summary of a two and a half-day workshop that was held on January 22-24, 2002. Knowledge about the condition of the natural resources in and adjacent to parks is fundamental to the National Park Service's ability to protect and manage the parks. Park managers are confronted with increasingly complex and challenging issues and are asked to provide scientifically credible information to select and defend management actions. In response to a congressional mandate to provide information on the long-term trends in the condition of the National Park system resources, a process was developed to complete basic inventories and to develop long-term ecological or vital signs monitoring. The process begins with a scoping workshop to:

1. Identify the natural resource base, significant natural resources and processes (ecosystem drivers) for the two parks,
2. Identify current threats and stresses that affect those natural resources, and
3. Brainstorm and recommend potential vital signs indicators for long-term monitoring that would capture changes (current and future, known and unknown) in the significant natural resources.

From sixteen to twenty-two participants took walking tours of both parks stopping to discuss the status of the knowledge about the natural resources, and the threats, management issues and stresses that may modify and change the condition of the natural resources. Then they developed several lists during several brainstorming sessions:

- the significant resources in the park,
- threats and stresses to the resources, and
- vital signs indicators that could be monitored to evaluate the condition and health of those resources.

Information from this scoping session, working groups and peer-review will be used as important information for the development of a natural resource monitoring plan for each park unit.

The workshop facilitator, Jennifer Bjork, developed the workshop summary.

Vital Sign Monitoring

Why?
- To report status and trends of natural resource condition
- To improve natural resource stewardship
- To develop science-based, adaptive management

What?
General conditions and trends of:
- Physical properties
- Native species, populations or communities

How?
Characteristics of existing long-term databases and good monitoring studies:
- Simple
- Systematic
- Scientific (peer-accepted protocols)
- Statistically valid
- Sustainable

John Muir National Historic Site

Significant natural resources - desired future conditions (in alphabetical order)

1. Floodplain terrace (Strain ranch area)
   Desired future condition: The ideal future condition is to have a functional floodplain with related values such as sediment retention, but safety and acting as a "good neighbor" may modify this condition.
   Actions: Consider restoration of the Strain flats to a wetland.
2. Grassland (Mt. Wanda peak area)
   Desired future condition: Encourage more diversity and percent cover of native grasses and herbs.
   Actions: Keep invasive exotic plants out.
   It may not be feasible to develop a native grassland. Constant disturbance will be required to maintain it. There was much discussion about how to create the disturbance (fire, mowing, grazing). The California ground squirrel used to be a major grazer. Should it be reintroduced here? The NPS does use short-term disturbance to restore an area, but it would be unusual to use long-term manipulated disturbance to maintain an area. There was also much discussion about whether this area had been shrubland or grassland in prehistoric times. If the area became a chaparral shrubland, fire protection would become a major park activity. A soil survey was encouraged to help answer the question of what vegetation type was desirable. In the meantime, maintaining the native grassland seemed appropriate.
3. Muir meadow (off Alhambra Rd.)
   Desired future condition: Unknown without further research on the appropriateness of combining oak woodland/grass restoration. There were more native grasses here than on the Mt. Wanda peak area.
4. Migratory corridors
   Desired future condition: Create and maintain migratory corridors and linkages to allow for healthy migratory populations.
   Particular species of concern: coyote, grey fox, mountain lion, bobcat, raptors, owls.
   Actions: Link the park with existing open space including the Sky Ranch, Almond property and Briones.
5. Oak woodland
   Desired future condition: Maintain a healthy community at the current size; restore the fire road along "no name" creek to a hiking trail
   Actions: Control noxious invasive plants. Encourage regeneration and, if necessary, develop a planting program to replace oaks that die. Treat the "no name" creek as an oak woodland, since it has a species composition closer to that community and since the creek bed is intermittent and dry most of the year. Could wildland fire fighting access be through the Almond property instead of up the creek? Then the park could restore the road to a hiking trail and reduce sediment erosion. The "no name" creek woodland is currently the most diverse in the park, provides important bird habitat, shade for visitors, and has the qualities of dark night sky and natural sound. The stock pond upstream of the fork in the creek bed is 90% full of sediment. The head cut above it is not stable. It needs to be reconfigured to slow erosion possibly using a natural stepped system.

6. Pastoral cultural scene
   Pastoral means of or pertaining to the countryside. The pastoral scene includes the orchards by the Muir House, the gravesite and orchards, the agricultural areas, and the ornamentals planted by the Muirs.
   Desired future condition: A mosaic of historical, rural, pastoral and wild landscape that is quiet, clean and has dark night skies.
   Actions: See actions under Viewshed.
7. Riparian corridors and wetlands
   Desired future conditions: Healthy, functional riparian corridors and wetlands
   Actions: Control noxious invasive plants.
   A possible restoration site is the Strain floodplain terrace using willows and other wetland plants developing a more sinuous stream corridor. It was thought that it is not appropriate to develop retention ponds and wetlands upstream in "no name" creek. A second potential restoration site is at Franklin Creek to develop a more natural riparian corridor.
8. Special status species
   Desired future condition: Maintain and enhance species populations and habitat.
   Actions: Actively remove invasive non-native plants in and adjacent to these habitats.
9. Top-level predators
   Desired future condition: Maintain habitat for top-level predators such as bobcats, raptors and owls.
   Actions: Maintain connectivity with other adjacent, large natural areas. Except for a few roads/transportation corridors that create barriers, there is a natural connection north to the Carquinez Straits or south following the creek beds.
10. Viewshed
    Desired future conditions: Good air quality, natural sounds and quiet, dark night sky, limited man-made structures.
    Actions: This will take a partnership with city and county land use planners. It is important to limit ridge-top development for all views from the park.
    Important views:
    a) Upper Mt. Wanda views to the S-SW to the N-NW. These views currently have a limited amount of development. This viewshed is critical to maintain desired future condition.
    b) Refinery and delta. Important to maintain clean air quality. Desired goal is to see the Sierra's.
    c) Grassland. Define the historical condition of the grasslands and determine if they are appropriate. It they are, it is appropriate to manage as a wildland, native grassland.
    d) Train trestle to Muir Station. Ridgetops are currently unbuilt.
    e) Views into and of the park. The fire roads are an intrusion to these views.
11. Watershed
    Desired future condition: Maintain it in a healthy state.
    Actions: Adopt the Alhambra Creek Watershed management goals if they do not oppose any park guiding principles.

Known stresses:

	Natural	Human-influenced
➢ External land use		X
➢ Landslides/erosion	X	X
➢ Non-native invasive plants		X
➢ Deep thatch in grassland		
➢ Wildland fire	X	X
➢ Disease	X	X
➢ Toxins/pollutants (air, water)		X

Ridgetop development is considered a deterrent to maintaining a pastoral viewshed and also has a potential for increasing sediment erosion into downstream riparian and urban areas. The Superintendent is encouraged to participate in developing the county permitting standards and process.

Restoring a sinuosity and water-absorbing wetland plants in the Strain floodplain terrace is generally considered to be the most important step in creating a sediment trap. This should reduce the amount of dirty water that reaches the Strentzel Lane area, since their major concern is dirty water more than flooding. Removal of the fire road from "no name" creek is also considered a positive action to reducing sediment erosion.

Ozone and particulates are the major air quality problems. Nox and sulphur sources include the oil/gas refineries and mobile sources along highways. The predominant easterly winds blow pollutants away from the park. Internal sources of air pollutants could come from diesel generators and wood stoves.

The current high thatch in the grasses may generate enough BTU's to take out the oaks. It currently is keeping native grasses and forbs from establishing. One person recommended to use "green flaming", prescribed burns in the winter, to reduce thatch. Prescribed fire can only be used for thatch reduction a few days out of the year due to the regional bad air quality. The last largest fires participants could remember were in 1879 and 1955. Homeless people are using the area under the train trestle and have started several fires. Stopping that activity to reduce wildland fire danger may take a park/police partnership.

Inventories completed or underway

- air quality (inferred from regional data)
- bats (presence/absence)
- bees (presence/absence)
- birds (presence/absence with some nesting information) – already documented 19 species nesting in the park
- cultural landscape map
- erosion potential along "no-name" creek
- herpetofauna (presence/absence)
- small mammals (presence/absence)
- vegetation (presence/absence with some distribution of non-native or species of special concern)

- water quality (selected national indicators)

Inventories, research or information that is still needed

Top priorities included:

- Soil map and description (type, thickness, moisture content, nutrient content). The Resource Conservation District may have this already. This is needed to determine historic and potential vegetation for the Mt. Wanda grassland, Muir meadow and the oak woodland.
- Slope and landslide potential map. Potential locations for soil inventories are the vegetation exclosures.

Other needed inventories included:

- Dark night sky baseline condition
- Fire as a process; develop a fire history (frequency, intensity, location). What are risk management and good neighbor considerations? Under what conditions is there a risk of fire moving from the park to adjacent properties? How should that be best addressed?
- Migratory corridors. Identify species needing these corridors and the habitats and corridor sizes that are needed.
- Natural soundscape baseline condition
- Non-vascular plants (lichens, mosses, fungi). They can be used as indicators of air quality.
- Oak health (baseline map of trees affected by sudden oak death syndrome) – tap into statewide and Contra Costa monitoring efforts
- Oak regeneration (regional scale - what is happening to oaks in Contra-Costa? What environment is needed for a sustainable oak population? Can we restore components or take active management to make it sustainable? What level of regeneration is needed to sustain the population? Is there a bottleneck in this process? Where and why?)
- Quail and feral/domestic cats. The level of impact of the cats on ground-nesting birds and other animals is unknown and needs to be investigated.
- Terrestrial invertebrate inventory
- Vegetation community composition around "no name" creek. Bay laurel is becoming dominant. Should it?
- Vegetation map to the association level – current baseline, historic maps. A cultural landscape report and maps are being developed this year. Will this include the natural plants and communities? A series of vegetation maps based on historic photos would be helpful. In addition, a "potential" vegetation map could be produced based on the soil survey and current plant population distribution.
- Visibility/viewshed baseline photographs on good and bad air quality days. Historical photographs could be used to establish several photopoint locations for comparability to historic views.
- Water quality baseline condition for both Franklin Creek and Alhambra Creek by or upstream of the gravesite. Identify sources, type and volume of pollutants in watershed above park.

Vital signs monitoring indicators

All monitoring mentioned was felt to be necessary, but it was recognized that funding and manpower constraints would limit the park's ability to do all of the monitoring immediately. A voting exercise was used to recommend the sequence of initiating the monitoring.

Highest priority = start this year, if possible (ranked 6 to 9)

- **invasive non-native plants** as an indicator of native plant community health. Map distribution and assess relative abundance of current populations for the baseline. Revisit, map and assess on a regular basis (frequency to be determined). Visit potential areas of introduction to document the presence of the non-native plants and record new introductions. Obtain historic records of control actions and keep current records to determine effectiveness of control actions. Monitor along vectors. The following invasive plants are of primary concern. Most have a clumped distribution, so should be easier to monitor and control:
  1. tree of heaven
  2. yellow-star thistle
  3. artichoke thistle
  4. tall white-top
  5. oblong spurge
  6. purple star thistle
  7. arundo
  8. vinca
  9. rabinius (black locust)
  10. fennel
  11. french broom
  12. poison hemlock

- **connectivity and top-level predators** as an indicator of community health. The most important aspect is to identify, maintain and monitor the migratory corridors themselves. Aerial photos could be used for this monitoring. Partnerships with large adjacent landholders such as the Almond property, Sky Ranch and Briones are important. Top level predators include:
  a) coyote
  b) mountain lion
  c) bobcat
  d) grey fox
  e) raptors (September migrant VIP event, nest cavity searches, spring counts)
  f) owls

Medium priority = start soon (ranked 2 to 4)

- **Native plants** (percent cover, richness and diversity). Inventory transects were established and surveyed in 1992. These could be used as the baseline and repeated every ten years. Black oaks may be a rare component of the woodland and deserve greater attention.

- **Deer** (charismatic, large mega-fauna). They browse woody vegetation and eat large amounts of acorns in the fall. Monitoring could be via habitat monitoring including mast production baskets and browse line surveys.
- **Ticks, lizards and disease**. Lizards are a dead-end vector for Lymes disease. Yearly collection of ticks and analysis for disease will allow the park to know and share information about the likelihood of getting the disease in the park. Monitor lizard population trends.
- **Water quality**. Identify and evaluate current data from other organizations such as the Central Sanitation (Alhambra Creek) and Contra-Costa County Water District (Delta intake). Select monitoring indicators. Aquatic invertebrates in Franklin Creek could be monitored. Monitor debris in Franklin Creek.

Lower priority = start when possible (1 vote)

- Air quality
  through County monitoring of EPA criteria pollutants
  visibility
  deposition
  grapes for ozone
  lichens for sulphur
- Amphibians as a sensitive indicator of air pollution
- Birds (September migrants, nesting)
- Dark night sky
- Deposition of nitrates, sulfates, heavy metals and POP's.
- Natural soundscape
- Small mammals such as the California ground squirrel (creates disturbance in grassland communities) and the Botta pocket gopher as an indicator of grassland community health
- Terrestrial invertebrates
- Visibility monitoring
- Weather – micro-climates

Eugene O'Neill National Historic Site

It was recognized that Eugene O'Neill NHS is primarily a cultural landscape. The main characteristic of the cultural landscape was considered to be that it was "cultivated". The understory was routinely disked and burned. Disking the orchards and fire buffers once a year in late April is still used to reduce thatch in and adjacent to the orchard to reduce the spread of wildland fire. Since the current orchards have very few native plants, workshop participants thought that disking or another land management method that is economical could be used for weed control and maintaining fire breaks. Historically, portions of the land were planted in grain, fruit or nut orchards, or ornamental plantings. Very little native habitat remains. The majority of the land is therefore a "vernacular" landscape.

Due to the small size of the historic site, it was also recognized that the habitat and land use in the surrounding Las Trampas Wilderness Area greatly affected what happened in Eugene O'Neill NHS. Therefore, a close working partnership would benefit both areas.

Remaining Significant Natural Resources (in alphabetical order)

1. Feeling of isolation
2. Grassland strip below the Tao House
3. Oak woodland/riparian edge community
4. Migratory corridor
5. Species of special concern
6. Springs (one feeding the stock pond and the second, the water towers)
7. Wildlife habitat
8. Viewshed

Desired future conditions were not developed for each of these resources, but are still needed.

Known Stresses to the Significant Natural Resources:

	Natural	Human-influenced
➢ Disease		
➢ Erosion and mass wasting	X	X
➢ External land use		X
➢ Non-native invasive plants		X
➢ Thatch (grass understory)		
➢ Toxins/pollutants (air, water)		X
➢ Wildland fire	X	X

Much of this discussion was similar to and repeated conversations at John Muir NHS.

Inventories, Completed or Underway

- Air quality
- Bats
- Bees
- Birds
- Cultural landscape report
- Herpetofauna (amphibians and reptiles)
- Mammals
- Vegetation
- Water quality (CK)

Inventories or Research, Needed

- ❑ Aquifer water quality
- ❑ Aromascape baseline
- ❑ Black walnut species identification
- ❑ Cultural landscape
  a) What plants have the potential to spread into the natural environment and become invasive weed problems? (ice plant?, morning glory?)
  b) What plants can be re-established into the landscape?
  c) What native ornamental plants can replace invasive plants and create the same look and feel in the cultural landscape?
- ❑ Dark night sky baseline
- ❑ Fire history (may already have been developed for Las Trampas)
- ❑ Grazing history and impact studies from Mt. Diablo
- ❑ Invertebrates
- ❑ Lickens and fungi
- ❑ Management action research study in 3 grass areas on the SE side of the park – disked annually (park property under orchards), "control" (no management since 1976), grazed spring and fall (East Bay Regional Park property). Are the understory plant communities different? How? Are the soil micro-fauna different? How? Are the soils different (nutrients, oxygen, moisture retention, thickness)? How? Which method would best support native grasses? Which method would best control invasive non-native plants and weeds?
- ❑ Microclimate, air quality, visibility, rainfall history
- ❑ Soil description and map (may have already been developed for Las Trampas) – includes type, moisture content, thickness, nutrient content, landslide potential
- ❑ Paleo/fossil resources (check with East Bay and others)
- ❑ Soundscape baseline
- ❑ Vegetation map
- ❑ Viewscape, current and historic
- ❑ Water course topographic map with finer scale at locations of erosion and mass wasting
- ❑ Water quality upstream and in the park

Check the Muir diaries, Danville and San Ramon Historical Societies and old newspapers to obtain historic weather, plant, animal, and habitat information.

Potential vital signs monitoring indicators

Highest priority (in rank order)

- **Native plants** (8) – monitor percent cover and species composition, closely monitor invasive noxious weed distribution (cooperate with East Bay Regional Parks)
- **Erosion features** (6)
- **Deer browsing** (6) – effect on cultural landscape and plants. What attracts deer and provides forage?
- **Surrounding land use** (6) (viewscape, sound, air quality, dark night sky)
- **Vegetation community level change** (4) (include East Bay parks)

Next priority (all 2's, in alphabetical order)

- Air quality (through existing regional monitoring stations) and visibility
- Oak health/sudden oak death
- Migratory corridor/wildlife habitat
- Riparian/woodland edge plant community
- Species of special concern

Others (in alphabetical order)

- Air pollutant deposition
- Amphibians
- Aquifer water quality
- Birds
- Surface water quality

Issues of concern affecting natural resources

1. Should the stock pond be restored to a functional wetland? The stock pond is property of East Bay Regional Parks. The regional park uses grazing as a management tool in the grasslands. The historic site has fenced the area to keep cattle out and has planted trees to create a visual buffer and enhance wildlife habitat. The area was historically a wetland area and is fed by an underground aquifer. During the summer months, the pond becomes anaerobic and the foul smells reach the Tao House. A topographic survey of this area is needed to determine feasibility and design of the wetland restoration, if that is the agreed upon habitat type. Recommendation: The site Superintendent, NPS Water Resources Division and East Bay Regional Park personnel should discuss and decide on the fate of this area.
2. Where should the management boundary with East Bay Regional Parks be? (pond? Orchard?)
3. Integrated pest management techniques should be used to control bird nesting and roosting in the Tao House roof tiles and in the barn. Could bird roosts and houses be placed in adjacent areas so that acidic bird dropping don't degrade the historic structures? What type is needed?

Regional Scale
Including Both National Historic Sites

Vital signs monitoring that include a larger scale to help understand and protect significant park natural resources were discussed. Two indicators were considered to be a high priority:

1. Landscape scale vegetation community change (6). In this category, change in habitat for species of special concern, vegetation community type and distribution, grazing acreage, fire locations and acreage could be captured.
2. Habitat fragmentation/connectivity (5).

Other indicators included:

- Oak woodland health (disease spread) (2)
- Amphibians
- Invasive non-native plant populations locations and change
- Soundscape
- Viewscape
- Visibility and dark night sky
- Water quality
- Wildlife – deer and birds

Port Chicago National Memorial

Since this is an affiliated site without completed inventories, it is too early to develop vital signs monitoring. Park management does need information to identify the appropriate boundary and scope of this memorial site. Where and what size should an appropriate buffer zone be? What can reasonably be justified for the size of this proposed NPS unit? The workshop participants identified the following information needs:

- Topographic survey, especially of the wetland areas to a micro-scale.
- Vegetation map including community type and species composition.
- Hydrologic function of the area both historically, current and potential.
- Hazard materials survey ("contaminant site survey") including soils and water quality.
- Shoreline armoring history and erosion potential.
- Adjacent land use, historic, current and proposed
- Species of special concern list
- Cultural landscape inventory identifying significant areas for the memorial story and effect of non-historic structures on the story
- Relationship of this area to the regional wetlands study list